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RADIOGRAPHIC ATLAS

Roy D. Altman

OARSI produced a Radiographic Atlas for Osteoarthritis of the Hand, Hip, and Knee as a supplement to *Osteoarthritis and Cartilage* in 1995. The atlas has had considerable use by individuals and in clinical trials. Despite being out of print, the atlas is still in demand.

Objective: Produce a radiographic atlas as a supplement to *Osteoarthritis and Cartilage* that will replace and improve on the 1995 images. A secondary objective is to have the atlas available in an electronic format.

Method: The 1995 atlas was reviewed for the images most useful for clinical trials. Replacement images were selected from the Stanford University picture archive and communications system (PACS) by reviewing consecutive radiographs obtained from patients. Selected images were downloaded without patient identification information. Images were organized by hand, hip and knee. They were reviewed for findings of osteoarthritis and images grouped into power point files by individual findings and degree of change. Both investigators individually selected the most promising images. Final images were selected by consensus. Original electronic images were then cropped and placed in sequence.

Results: Individual radiographic features (eg. osteophytes, joint space narrowing) were recorded for hand (DIP, PIP, 1st CMC), hip (acetabular, femoral) and knee (medial compartment, lateral compartment, tibial, femoral); they were also sequenced for normal, 1+, 2+, and 3+ change. Images were available in print and electronic formats.

Conclusion: A radiographic atlas for osteoarthritis of the hand, hip and knee was produced for use in clinical practice or clinical trials.

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HISTOPATHOLOGY

Thomas Aigner

Established and broadly accepted histopathological criteria for grading and staging of osteoarthritic changes in the human as well as in animal models of cartilage degeneration is an important step in OA research. This is needed in order to allow for the comparability of studies performed in different places round the world. OARSI has taken this challenge and established a "Committee for the establishment of histopathology criteria for animal models" consisting of different sub-committees for different species. In principal and practice, every expert is welcome to contribute his experience. First proposals for grading and scoring systems will be introduced and will be open for discussion.

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EVALUATION AND VALIDATION OF MICROARRAY DATA IN OSTEOARTHRITIS AND CARTILAGE RESEARCH

Thomas Aigner, Ralf Zimmer

Large-scale gene expression analysis became an important experimental tool in cartilage and OA research over the last years. Whereas this approach clearly generated more and more large data sets, the difficulties related to the validation and evaluation of the obtained information remained enormous. This workshop will introduce the topics and issues of large scale gene expression profiling focussing on biostatistic and bioinformatic issues. It will show examples how data analysis can be performed and how important biostatistical and bioinformatical are in order to obtain reasonable results.

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TRASCRIPTIONAL REGULATION OF CHONDROCYTE GENE EXPRESSION

Linda Sandell

Extracellular matrix metabolism plays a central role in development of skeletal tissues and in most orthopaedic diseases and trauma such as fracture or osteotomy repair, arthritis, cartilage, repair and congenital skeletal deformity. During development or diseases, specific genes must be expressed in order to make or repair appropriate extracellular matrix. For example, specific gene expression patterns are characteristic of bone and cartilage. The precise expression pattern depends on ta balance of positive and negative transcription factors, proteins that control the synthesis of mRNA from the specific gene. In cartilage, a number of studies indicate that Sox transcription factors are critical positive regulators in genes such as COL2A1 COL0A2, CoOL11A2, aggrecan and CD-RAP. In addition negative regulators are also essential to fine tune gene regulation in chondrocytes and to turn of gene expression in non-cartilaginous tissues. Negative transcription factors in cartilage included ∂EF-1, snail/slug, CYRBP1, NT2 and C/EBP. Runs2 and osterix are critical transcription factors for osteogenesis but also have some influence on chondrogenesis. The availability of cis-regulatory sites in specific genes combined with the availability of transcription factors in the nucleus determines the level of gene expression. Lastly, the selection of protein splice forms is made at the level of nuclear processing of the precursor transcript in the nucleus and is coupled to gene transcription.

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THE INTERNATIONAL GROWTH OF JOINT REPLACEMENT: DEVICES AND DEMOGRAPHICS

Thomas Parker Vail

While the growth in the number of total joint procedures worldwide is not disputed, there exists a large regional variation in the number of procedures performed per 1000 persons across countries and continents. In the United Kingdom, it is estimated that in 2006 almost 10% of the population over 65 years of age will receive a hip or knee replacement. In the United States and Canada, the number approaches 10% for hip replacement and over 14% for knee replacement procedures. In contrast, less than 5% of the over 65 population in the Baltic States, Poland, Russia, Greece, Turkey, Israel, Egypt, and Japan (among others) will receive a hip or knee replacement. More astounding is the fact that even in the countries with the highest utilization, it is estimated that the procedures are offered to only a fraction of the people who could benefit. Not only is it interesting to consider the factors that are driving the need for these procedures, but also the reason for the variation. There is no question that economics are a major factor, but other factors that explain variation include availability of devices and surgeons, fear and lack of patient education, and insufficient cost/benefit analysis to drive health policy decisions.